

Dr. Marina Mlakar



CURRICULUM VITAE

CONTACT INFORMATION

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PERSONAL

Date of birth: 03-April-1958. (Ottawa, Canada)
Citizenship: Croatian, Canadian
Marital status: Married, two children

PRESENT POSITION

Senior research associate
Head of Laboratory for Physical Chemistry of Traces
Head of Division for Marine and Environmental Research
Ruđer Bošković Institute

EDUCATION

1988. Ph.D in Chemistry, University of Zagreb, Zagreb
1984. M.Sc in Oceanology, University of Zagreb, Zagreb
1981. B.Sc in Chemistry, University of Zagreb, Zagreb
Elementary and high-school education in Zagreb, Croatia

Ph.D Thesis: "Synergetic adsorption of uranium (IV) mixed complexes on the mercury electrode", Mentor: prof. dr. Marko Branica
M.Sc Thesis: "Interaction of uranyl-ion with phenylalanine, salicylic and phthalic acid in seawater conditions", Mentor: prof. dr. Marko Branica

B.Sc Thesis: "Organic synthesis of nucleotide analogons", Mentor: prof. dr. Ante Deljac

PROFESSIONAL EMPLOYMENT

- 2010 - Senior scientist, Division for Marine and Environmental Research, Ruđer Bošković Institute, Zagreb, Croatia.
- 2004 - 2010 Senior research associate, Division for Marine and Environmental Research, Ruđer Bošković Institute, Zagreb, Croatia.
- 2004 - 2006 Assistant Minister, Ministry of Culture, Nature Protection Division
- 1994 - 2004 Research associate, Division for Marine and Environmental Research, Ruđer Bošković Institute, Zagreb, Croatia.
- 1988 - 1994 Research assistant, Division for Marine and Environmental Research, Ruđer Bošković Institute, Zagreb, Croatia.
- 1981 - 1988 Graduate student and junior research assistant, Center for Marine Research, Ruđer Bošković Institute, Zagreb, Croatia.

From 2004-2006 – Assistant Minister in Division for Nature Protection

From 1999 - 2000. – residence in Japan as a spouse of Croatian Ambassador to Japan (sabbatical).

PROFFESIONAL ACTIVITIES AND DUTIES

- 2016 - Head of Division for Environmental and Marine Research, Rudjer Boskovic Institute
- 2015 - Head of Laboratory for Physical Chemistry of Traces, Rudjer Boskovic Institute
- 2014 - Member of the Steering Committee for Preparation of Structural project at IRB, Open Scientific Infrastructural Platforms for Innovative Applications in Economy and Society (O-ZIP)
- 2013 - Member of National Scientific Board for Interdisciplinary Natural Sciences
- 2011 - Member of Scientific Council, Rudjer Boskovic Institute

Leader and key proponent of scientific projects:

- "New methodological approach to biogeochemical studies of trace metal speciation in coastal aquatic ecosystems" MEBTRACE, Croatian Scietific Foundation (CSF), 2015.-2019., (coordinator of "Fe speciation methodology development;
- "Appearance and interaction of biologically important organic molecules and micronutrient metals in marine ecosystem under environmental stress", (AMBIOMERES); CSF; 2014.-2018., (key proponent and coordinator of: "Design and evaluation of investigations on metal complexes with natural organic molecules";
- Project leader: "Biogeochemical characterization of ecotoxic trace metals in marine lake Mir", Park of Nature Telašćica and Foundation for Nature portectio,, 2009-2013;

- Coordinator of Project: "Fundamental physico-chemical and geological characterization of sediments in the Neretva estuary", 2010.- 2011, Croatian waters.

SCIENTIFIC AND RESEARCH INTERESTS AND ACTIVITIES

- Development of new method "synergistic adsorption" for voltammetric determination of trace metals in natural concentration in natural water ecosystems.
- Development of electrode process mechanisms of various complexes metal –organic ligand and application in voltammetric measurements of trace metals in natural waters considering optimal conditions.
- Study of trace metals distribution and their biogeochemical cycles different compartments of natural aquatic systems (water, sediment, biota), with special focus on Marine National Parks water ecosystems.
- Investigation of Fe(III) complexes with natural organic ligands engaged in the biochemical processes in seawater for purpose of possible influence on the CO₂ cycle.
- Investigations on the interaction of selected OM (polysaccharides, lipids, polymeric organic matter containing N catalytic atoms) with micronutrient metals (Fe, Co, Cu, Cd and Zn). Laboratory phytoplankton monoculture incubation under various growth conditions (nutrient concentrations and temperature variations) with a purpose to simplify comprehension of multiple impacts on the phytoplankton OM production and micronutrients metals distribution.
- Master the methodology of Fe electrochemical determination in natural seawater. Inspection of Fe concentration levels in selected areas along the Croatian Adriatic coast, considering seawater oligo/eutrophic degree.

Reviewer in the following journals:

- Editorial Board of ISRN Electrochemistry;
- Analytica Chimica Acta;
- Electroanalysis,
- Journal of Electroanalytical Chemistry;
- Electrochimica Acta;
- Croatica Chemica Acta;
- Analyst;
- International Journal of Environmental Analytical Chemistry;
- PLOS ONE;
- Science of the Total Environment;
- Marine Chemistry;
- Estuarine, Coastal and Shelf Science;
- Journal of Marine Systems;
- Environmental Science and Pollution Research;

- Water Research
- Periodicum biologorum

Reviewer and evaluator of scientific projects and B.Sc. And M.Sc. studies:

- L'Agence Nationale de la Recherche, France;
- Organization „The economics in ecosystems and biodiversity, France;
- Georgia National Science Foundation; Georgia;
- Bulgarian National Science Fund, Bulgaria;
- University of Zagreb

Invited professor/scientist :

1. Université de Lille, Laboratoire de Chimie Marine et Analytique, France (1997 – 2000.); staying in periods 1 – 4 months during four years.
2. Eidgenössische Technische Hochschule Zürich, Switzerland, Laboratorium für Anorganische Chemie (15.9. 1996. - 15.04.1997.)
3. United Nations office in Tokyo, Japan, expert in „Department for Environmental protection“, 1999.-2000.
4. Center for International Collaboration, Atmosphere and Ocean Research Institute, The University of Tokyo (2000.), invited scientist.

Principal investigator of the following educational projects:

- Elaborate on specific water bodies in coastal zone of Republic of Croatia with proposition of the limit values for trace metals in sediments/biota”, 2018.;
- Elaborate on limit values of dangerous substances in sediments and biota in transitional and coastal waters of the Adriatic sea in Republic of Croatia”, 2014.
 - Trace metals determination in fresh, brackish and saline waters of Republic of Croatia (educational and scientific project), 2012.
 - Trace metals determination in waters and sediments (educational and scientific project), 2011.
 - Trace metals determination in natural waters and sediments of Republic of Croatia (educational and scientific project), 2010.
 - Trace metals determination in natural waters and water organisms (educational and scientific project), 2009.

Collaborator in international scientific projects:

- Chinese/Croatian bilateral project: Comparison study on submarine groundwater discharge and its impacts on the eco-environments between Changjiang and Krka River estuaries—High human activity vs. low human activity, 2016-2017.

- Chinese/Croatian bilateral project: Determination of trace metal speciation in coastal waters: towards developing new criteria for water quality control and risk assessment. 2014-2015.
- Consultant (Expert for water chemistry) EU Project „River Basin Management“ (EuropeAid/128277/C/SER/Multi) –implementation of „Sava River Basin Management Plan“, 2010.-2012.
- “Influence estimation of antifouling as pollution sources by ecotoxic metals in coastal seawater environment”, 2011-2012., COGITO (FRA-CRO).
- World Bank Project for the Nature protection and WWF (World Wildlife Fund) Mediterranean Programme Office, “Science Planning in Mediterranean Ecosystems”, 2008-2012.

Key proposer of international projects:

- Adriatic-Ionian Programme INTERREG V-B Transnational 2014-2020: „Enhance the capacity in transnationally tackling environmental vulnerability, fragmentation, and the safeguarding of ecosystem services in the Adriatic-Ionian area“, ECASA, 2017.
- IPA Projekt – Priority 2, „Development and application of hydrogeochemical and biological indicators in sustainable management of coastal and karstic aquifers in the adriatic region, DAIM-Adria, 2013.
- FP7-OCEAN-2011, OCEAN.2011-3: Assessing and predicting the combined effects of natural and human-made pressures in the Mediterranean and the Black Sea in view of their better governance, Consilience, Integration and Improvement in Knowledge & Governance of Marine Environment in the Mediterranean and the Black Sea, CONSINTEG, 2011.

Teaching activities:

- Interdisciplinary doctoral study at Universities Dubrovnik, Osijek and Institute Ruđer Bošković, Molecular biosciences, Module: Marine Biology, collegium: Metal ions and organic matter in natural waters.
- Interdisciplinary doctoral study in Oceanology, at Faculty of Science, collegium: „Analysis of trace elements in marine environment“, University of Zagreb.

Students Mentor and advisor:

- Ivan Čuljak, M.Sc. thesis of Oceanology, „Synergism in copper (II) adsorption at mercury drop electrode“, 1994;
- Vlado Cuculić, M.Sc. thesis of Oceanology, „Adsorption of copper (II) complexes from aqueous solutions to solid phase and mercury drop“, 1997;
- Stéphanie Leclercq, Ph.D. thesis, Flux de métaux en Manche, Université de Lille, France; 1998.
- Petra Vukosav, Ph.D. thesis, „Voltammetry of Fe (III) complexes with organic ligand involved in marine natural processes“, 2011;

- Sonja Pavković, B.Sc. thesis, “Voltammetry of Cu (II) bakra in aqueous solutions of aminoacids: cistein, histidine and methionine”, 2015;
- Krešimir Maldini, Ph.D. thesis, „Geochemisty of river and estuary of Cetina river” “, under review.

Member of national and international Organizations:

- Croatian Natural Sciences Society
- International Commission for the Scientific Exploration of the Mediterranean Sea (CIESM)
- International Union for Nature Conservation (IUCN)
- Cities and Protected Areas Specialist Group, IUCN World Commission on Protected Areas
- Committee for ecosystems management, CEM (IUCN)
- „The economics of ecosystems and biodiversity organization” (TEEB study – UNEP).
- Central European Association for Canadian Studies.
- International Society of Electrochemistry (ISE)
- Society for Environmental Geochemistry and Health – SEGH.